DOCUMENT RESUME

ED 046 325 HE 001 897

AUTHOR	Ikenberry, Stanley O.
TITLE	A Profile of Proliferating Institutes. A Study of Selected Characteristics of Institutes and Centers in 51 Land Grant Universities.
INSTITUTION	Pennsylvania State Univ., University Park. Center for the Study of Higher Education.
REPORT NO	R-6
PUB DATE	Nov 70
NOTE	20p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Growth Patterns, *Higher Education, *Land Grant Universities, *Organization, *Research and Development Centers, Surveys

ABSTRACT

This study reviews some selected characteristics of 907 institutes and centers in 51 Land Grant Universities in each of the 50 states and Puerto Rico. The institutes and centers discussed were all formally identified by specific names and titles in the Research Centers Directory and were established on a permanent basis as separate entities for carrying on continuing research programs. This report considered the number of centers in the universities and relates their number to the quality of the university, and found that institutes and centers usually exist in large, complex, multifunctional institutions oriented toward graduate and research activities. The report also reviews: (1) the growth patterns of the centers, (2) their areas of concentration, and (3) the location of these institutes and centers within the organizational structure of the universities. (AF)

ED046325

A PROFILE OF PROLIFERATING INSTITUTES

A Study of Selected Characteristics of Institutes and Centers In 51 Land Grant Universities

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Stanley O. Ikenberry

CENTER FOR THE STUDY OF HIGHER EDUCATION
THE PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK, PA.

November 1970 **Report No. 6**

HE001 897

One of the more significant changes in organizational structure of the complex university in recent decades has been the emergence of large numbers of semiautonomous research institutes and centers.[1] Perhaps as many as 5,000 such units are in operation in major American universities, and in some universities, institutes may be almost as numerous as departments. That some change should have come about in the organizational structure of the university is, of course, no surprise. When the range of goals and functions of the contemporary university is contrasted with that of a half century earlier, the surprise is that the change has been as modest and gradual as has been the case. Neal Gross argued persuasively nearly a decade ago that there was an "organizational lag" caused by changes in goals and functions of universities that had outrun the capacity of the organizational structure.[2] The emergence of institutes and centers is testimony not only to the expanded role of the university in society, but to the related adaptation in organizational structure.

---

[1] A variety of organizational terms may apply here including, in addition to "institutes and centers", terms such as "laboratory", "office", "bureau", "service", and others. For convenience in discussion, the terms "institutes and centers" are used to suggest the full range of "non-departmental structural alternatives".

[2] Neal Gross, "Organizational Lag in American Universities." Harvard Educational Review, Vol. 33, No. 1 (Winter, 1963).

But no simple rationale will explain the rapid growth of institutes and centers. Certainly, not all of the impetus came from an inability of the conventional structure, primarily the academic department, to adapt to new functional demands. The impetus has come from a wide range of forces such as the availability of new sources of financial support, new constituencies, different faculty aspirations and role expectations, growing needs of administrators to exert academic leadership, increased urging from external sponsors, rising individual and institutional needs for status and prestige as well as the sheer burden of bigness and an obvious need to improve lines of communication and professional relationships.

The recent growth of institutes and centers, however, has not been without controversy -- complaints are numerous. Some critics describe the growth of institutes and centers as creating an administrative jungle while others, particularly members of departments of long-standing, argue that the addition of institutes and centers has placed an unnecessary drain on already overtaxed university resources.[3] Department chairmen complain about weakened faculty loyalties and distorted value systems of those associated with institutes and centers. Some members of academic disciplines resent the visibility and attention received by the task- or problem-oriented units and charge that institutes and centers tend to persist long beyond the intent of the initial mission. But in spite of the obvious lack of affection in many quarters, the numbers of institutes and centers increase each year.

---

[3]Paul L. Dressel, F. Craig Johnson, and Philip M. Marcus. "The Proliferating Institutes," Change. Vol. 1 (July-August, 1969), pp. 21-24.

Little is known about such elementary questions as the growth patterns of institutes and centers, dates of origin, areas of concentration, position within the university organizational structure, funding sources and other basic descriptive characteristics. Preparatory to a larger-scale study of origin, structure and functions of institutes and centers, a preliminary review was made of a few selected characteristics of institutes and centers in a group of 51 Land Grant universities. This cluster of Land Grant universities was selected for study because it constituted a definable group or class of universities, had in common a tradition of applied research and public service, and shared in common the sponsorship of one of the more recently created institutes and centers, the water resources research units. One university from each of the 50 states and Puerto Rico was included.

Information on specific institutes and centers was found in the third edition of the Research Centers Directory[4]. Included in the Directory are institutes, centers and related units that are formally identified by specific names or titles and are established on a "permanent basis" as separate entities for carrying on continuing research programs. Research, for Directory purposes, was interpreted broadly and includes basic as well as applied and developmental studies, data gathering, analysis and synthesis, as well as provision of research supporting services and coordination of research. All institutes and centers listed in the Directory were included in the initial sample, although certain units were subsequently excluded as will be noted. Institutional listings, however, were not necessarily complete nor were the data always accurate in every case. Yet, it was believed the results of the analysis would be generally useful.

The information contained in the Directory was supplied by the director or head of the institute or center. For the purposes of this

---

[4]Research Centers Directory, Archie M. Palmer, Editor. Detroit, Michigan: Gale Research Company, 1968.

descriptive study, the name, area of concentration, university affiliation, date of founding, position within the university structure, and sources of financial support were extracted for 907 institutes and centers listed for the 51 universities. Agricultural experiment stations and their sub-units were excluded. Descriptive data were added for institutions showing geographic region, Cartter report ranking,[5] number of Ph.D. degrees awarded, library holdings, periodical holdings, general educational expenditures, expenditures of sponsored research, enrollment, state population, books per student, gross expenditures per student and ratio of sponsored research revenue to total education and general expenditures.

A simple Chi Square analysis was judged appropriate for preliminary testing of relationships among the variables included in the study. Significance at the .001 level was required.

Numbers of Centers

Utilization of institutes and centers as an organizational form apparently varies widely among institutions. Ten percent of the universities listed fewer than five institutes or centers while another 10 percent listed 35 or more. Eighty-six institutes and centers were listed in the case of one university. As may be noted by reference to Table I, the typical university was likely to have somewhere between 6 to 20 institutes and centers. Although no comparable estimate of the number of departments per university is available, one might expect that a ratio of one institute or center for every four or five departments might not be uncommon. It

---

[5]The data reported by Cartter (Allan M. Cartter, An Assessment of Quality in Graduate Education. Washington, D. C.: American Council on Education, 1966) were converted into composite institutional ratings by Raymond Ewell of the State University of New York at Buffalo and published in an informal paper, "A Quantified Summary of the American Council on Education Report, 'An Assessment of Quality in Graduate Education,'" December, 1967. The Cartter report ranking noted above is that supplied by Ewell.

was obvious, however, that wide variation existed among institutions in the extent to which institutes and centers were fostered or restricted as an organizational mode.

TABLE I

Numbers of Institutes and Centers Per University
In a Sample of 51 Land Grant Universities

Number of Institutes	Number of Universities Within Size Range			
	Number	Percent	Cumulative Number	Percent
1 - 5	5	9.80	5	9.80
6 - 10	13	25.49	18	35.29
11 - 15	9	17.65	27	52.94
16 - 20	9	17.65	36	70.59
21 - 25	6	11.76	42	82.35
26 - 30	4	7.84	46	90.19
31 - 35	-	--	46	90.19
36 - 40	3	5.88	49	96.07
Above 40	2	3.92	51	99.99
TOTAL	51	100%	51	100%

Mean = 17.8
Median = 15.0

It is difficult to determine, from this restricted sample, which universities were most inclined to utilize institutes and centers as an alternative to the conventional departmental structure. Within this group of land grant universities, the results of the analysis tend to

suggest that institutes and centers were more likely to appear in universities that were located in the Middle West; were in the top ranks of the Cartter report; were high in doctoral degree production, library holdings, level of education and general expenditures and amounts of sponsored research; were located in well-populated states; and had large enrollments. In short, the data tend to confirm the obvious impression that institutes and centers are most likely to be found in the large, complex, multi-functional Land Grant universities, which are oriented toward graduate and research activities.

Growth Patterns

An interesting pattern of growth emerges when the date of founding is examined for the 907 institutes and centers. Information on date of founding was not available for 50 of the institutes and centers, thus reducing the number in this instance to 857. Fewer than one fifth of the institutes and centers (18.1 percent) were established prior to World War II. An additional one fifth (23.0 percent) report a date of founding during the period 1940 through 1954. But the bulk of institutes and centers, (58.9 percent) had been established since 1955. Data showing dates of founding are reported in Table II.

It is interesting to observe apparent changes in the rate of growth during the last few decades. During the decade of the 1940's, 117 institutes in the sample were established, while 215 institutes and centers were founded in the 1950's. Data for the 1960's are incomplete, with information on many new institutes established during the last half of the decade not yet recorded in the Directory. To date, 360 institutes and centers show founding dates in the 1960's, but complete

returns may likely move that figure to some 500 for this sample of 51 universities. Thus, a decade by decade growth rate of 117, 215, to an estimated 500 emerges for the 30-year period, or a ratio of approximately 1:2:4.

TABLE II

Dates of Founding of Institutes and Centers
In A Sample of 51 Land Grant Universities

Date	Number	Percent	Cumulative Number	Cumulative Percent
prior to 1940	155	18.09	155	18.09
1940 - 1944	36	4.20	191	22.29
1945 - 1949	81	9.45	272	31.74
1950 - 1954	80	9.33	352	41.07
1955 - 1959	135	15.75	487	56.83
1960 - 1964	291	33.96	778	90.78
1965 - 1969	79	9.22	857	100.00
TOTAL*	857	100%	857	

* Date of founding was not available for 50 of the institutes and centers included in the sample. These 50 institutes are excluded from the table above.

Variation in date of founding among various geographic regions of the country was apparent. Institutes and centers established in earlier decades were somewhat more likely to be in the Middle West, probably reflecting the status of Middle Western universities among the Land Grant universities as a whole. More recently established institutes tended to fall in disproportionate numbers in the North Eastern and Middle Atlantic states.

Possible patterns of relationships were observed between the date of founding and the position of the institute within the university organizational structure. For example, earlier-established institutes and centers tended to be incorporated in greater frequencies within schools and colleges, while more recently established ones tended to be independent of the conventional departmental/college structure.

Related to this was the indication that older institutes and centers were somewhat more likely to have financial support from the universities. While all institutes and centers were likely to have some university financial support, the probability appeared greater for the more mature centers. The earlier-established centers also obtained an apparent advantage in terms of funding from business and industry. Conversely, support from the Federal government and foundations was more likely to be found in the more recently established centers.

Accordingly, an examination of dates of founding in this sample of 857 institutes and centers in 51 land grant universities suggested that: (1) most had been established during the last two decades; (2) the rate of establishment of new institutes had increased rapidly; (3) earlier institutes had a tendency to be established in the Middle Western universities of the sample; and (4) older institutes seemed somewhat more likely to have local funding support (university, business, industry). No relationship was identified between date of founding and institutional data such as ranking on the Cartter report; numbers of Ph.D. degrees produced; library holdings; number of periodicals; total educational and general expenditures; sponsored research revenue; enrollment; state population;

books per student; ratio of sponsored research to total educational and general expenditures; and expenditure per student.

Areas of Concentration

Few areas of human concern remain untouched by institutes and centers. Mention of the Centers for Labor and Industrial Relations, Ethnic Research, Ethnomusicology, Pacific and Asian Linguistics, Community Development, Technology, Primate Research, Environmental Health, Medieval Spanish Studies, Geophysics, Brain Research, Cellular Biology, Psychopharmacology, Human Development, Engineering Design, Research on Vision and Enzyme Research only touches the surface.

The distribution of the 907 institutes and centers among areas of concentration is reported in Table III. Interestingly, two thirds of the institutes and centers fall into the basic and applied sciences such as agriculture, astronomy, life sciences, physical and earth sciences and others. The remaining third are in the social sciences, humanities, business, government, education and related areas of concentration.

Following the system of categories developed by the Directory, institutes and centers in this sample of 51 Land Grant universities were most numerous in areas of the life sciences, physical and earth sciences, engineering and technology, in that order. Continuing in order of frequency, institutes and centers in the social sciences, conservation, mathematics and education followed. The least popular areas appeared to be law, astronomy, the so-called "multidisciplinary" programs, and regional and area studies. While Table III shows only 10 institutes and centers in the area of agriculture, it should be remembered that all agricultural experiment stations and institutes and centers that were reported as subunits of the experiment station were removed from the sample.

TABLE III

Areas of Concentration of Institutes and Centers
In A Sample of 51 Land Grant Universities

Area	No. of Institutes and Centers	Percent of Total
Agriculture, Home Economics, Nutrition	10	1.1
Astronomy	13	1.4
Conservation	83	9.2
Engineering and Technology	107	11.8
Life Sciences	169	18.6
Mathematics	68	7.5
Physical and Earth Sciences	155	17.1
Sub-Total	605	66.7
Business, Economics and Transportation	49	5.4
Education	55	6.1
Government and Public Affairs	40	4.4
Labor and Industrial Relations	17	1.9
Law	2	.2
Multidisciplinary Programs	15	1.7
Regional and Area Studies	27	3.0
Social Sciences, Humanities, & Religion	97	10.7
Sub-Total	302	33.4
TOTAL	907	100.0

Was there a relationship between the areas of concentration of the institutes and centers and the geographic location of the university? No clear patterns were apparent, but there was some indication that centers in areas of education, labor and industrial relations, and the social sciences, humanities and religion were found in greater frequencies in the Middle West.

Astronomy, government and public affairs institutes tended to concentrate in slightly larger numbers in the Northeast and Middle Atlantic states. Physical science and conservation seemed more prominent in the West and Southwest.

Some relationship between the position of the institute or center within the university structure and the area of concentration was observed. In general, there was a tendency for those institutes and centers dealing with problems in business, education and engineering to be established within a college. Those in areas such as mathematics (in most cases these were computer centers), labor and industrial relations, regional and area studies, physical and earth science, and astronomy were more likely to be established independently of any single school or college. In short, institutes and centers concentrating in an area covered by an existing professional school were more likely to be located within that school.

While there was no apparent indication that the university was more likely to support institutes in one area of concentration than another, government, foundation and business-industry funding was apparently related to area of concentration. Agriculture, conservation and the physical and earth sciences appeared more likely to have Federal funds while regional and area studies, the social sciences, and education were among the more successful with foundations. Engineering, as might be expected, was more likely to receive support from business and industry than institutes and centers in other areas of concentration.

Institutes in astronomy, conservation, engineering and the life sciences were more frequently among the first to be established while

education, law, the physical and earth sciences, the social sciences and humanities, and the computer centers seemed to follow in subsequent decades.

It was possible to define an apparent relationship between the ranking on the Cartter report of institutions and the areas of concentration of institutes and centers. Institutes in astronomy, education, regional and area studies and the social sciences and humanities tended to be found in institutions ranking higher on the Cartter report. Indeed, this also proved to be the case for variables such as the number of Ph.D. degrees produced, library holdings, number of periodicals, education and general expenditures, sponsored research revenues and enrollment. In each case, institutes and centers in areas of astronomy, education, regional and area studies and social sciences, humanities and religion were more likely to appear in institutions ranking "high" on these measures. At the other end of the scale, institutes and centers in conservation, engineering, government and public affairs, mathematics and the physical and earth sciences tended to fall disproportionately in "lower status" institutions. Such relationships, however, suggest no obvious rationale and are likely to be influenced heavily by the characteristics of this particular sample of 51 Land Grant institutions.

In summary, it was perhaps of greatest interest to note the concentration of institutes and centers in this group of Land Grant universities in the basic and applied sciences -- as opposed to the social sciences and humanities. As was reported, funding patterns differed among areas of concentration as might have been predicted, with engineering more favored by business and industry, government funding heaviest in science and technology, while the foundations were proportionately more active in the

social sciences. It is in those areas related to the social sciences in which institutes have been established most recently. As one might predict, institutes and centers that can be lodged in professional schools are more likely to be found there, while others are more likely to be established independently of the departments and colleges.

Location of Institutes and Centers within the Organizational Structure

Institute and center directors were asked to report to the Directory the position of their institute or center within the general organizational structure at the university. The categories utilized by the Directory in reporting these relationships included, in essence, that of an autonomous, free standing center independent of any department or college; a center organized within a center; a center established within a college; and a center lodged within a department.

The position of the institutes and centers in the organizational structure of this sample of 51 Land Grant universities is reported in Table IV. Almost one half of the institutes and centers (47.3 percent) were reported to be autonomous or free standing, independent of any particular department or college. The second most prominent position within the organizational structure was that of a college-wide center, presumably independent of any particular department within the college and with the center director reporting to the dean. Approximately one quarter of the institutes in this sample were so organized. Seventeen percent of the institutes and centers were established within an academic department while the final alternative, the establishment of a center within an institute or center, was found in slightly less than 10 percent of all cases reported.

TABLE IV

University Relationship of Institutes and Centers
In A Sample of 51 Land Grant Universities

Status	Number	Percent
Free Standing	429	47.3
Center within a Center	84	9.3
Center within a College	233	25.7
Center within a Department	158	17.4
Unknown	3	.3
TOTAL	907	100%

Can a relationship be ascertained between the location of an institute or center within the university organizational structure and the source of funds utilized by the unit? The data were examined in terms of this question and certain patterns of relationships appeared to emerge. For example, institutes and centers established within a school or college appeared to be most likely to receive university funding, while centers established as part of a larger institute or center appeared to be somewhat less likely to find themselves in that favorite position. Government funding was also apparently more likely to be available in institutes established at the college level, and in this sample, somewhat less likely to be found in centers organized within larger institutes or centers, and in centers established at the departmental level. Similar patterns of strength appeared to be operating in the case of foundation funding, while in the case of attracting funding from business and industry, institutes organized at the college level appeared to be more successful.

An apparent relationship was observed between the date of founding of the institute or center and its position within the university organizational structure. Institutes established on a university-wide basis also had a tendency to be established more recently. Older, more mature institutes and centers were found in disproportionate numbers at the college level. Alternative interpretations are possible. The data suggest the possibility of a recent trend toward the establishment of institutes and centers on a university-wide autonomous basis. It is alternatively possible that the more mature institutes and centers, once established, have a tendency to be moved back within the conventional academic structure. In this particular case, the data raised more questions than are answered.

The relationship between the location of an institute or center within the university structure and the ranking of the institution on the Cartter report was examined. There appeared to be some very slight tendency for institutes and centers located in higher ranking Cartter report institutions to be established at the college level but the relationship was not sufficiently strong to be of any substantive significance.

In general, institutes and centers in this sample of 51 Land Grant universities appeared to be established independently of existing schools and colleges, or as a second ranking alternative, within a school or college. Several factors seemed to suggest that centers located as part of larger institutes and centers and those established at the departmental level were likely to be strong and fully functioning enterprises.

Discussion

The findings of this brief descriptive study of institutes and centers in a group of 51 Land Grant universities confirm several assumptions. First,

while some universities have moved much more rapidly than others, institutes and centers are a significant element in the organizational structure of most Land Grant universities. In some institutions, institutes and centers are almost as numerous as departments, with an average of some 18 institutes and centers each in this particular group of universities.

The decades following the close of World War II saw a rapid expansion in the numbers of institutes and centers, with the rate of expansion increasing sharply each decade. From separate telephone interviews with a number of academic vice presidents and vice presidents for research, no clear indication was obtained of any significant slowdown in the growth rate during the decade of the 1970's. There is some indication that the numbers and significance of institutes and centers may continue to expand in spite of a variety of complaints about institutes and centers from within the university and a general retardation in the growth of funding support from Federal as well as state and local sources.

We know comparatively little about the forces and the sources of initiative that bring institutes and centers into being. Obviously, the availability of new sources of financial support and new persuasive constituencies, including the Federal government play a significant role. The new breed of faculty entrepreneur, the need for the university to embrace new goals and objectives, and the search by university administrators for new ways in which to influence the course of the institution have undoubtedly contributed to the rapid growth of institutes and centers. But a more precise description of these forces and others, as well as the more subtle interactions and tradeoffs, await more detailed analysis.

Neither do we have a clear understanding of the difference in functioning between the academic department and institutes and centers. What do faculty, administrators and external constituents _think_ institutes and centers can accomplish that is unlikely or impossible to accomplish in the conventional department? A president of one Land Grant university with 50 or so institutes and centers claims that academic departments _can_ do everything that might be done by institutes or centers. The only problem, he asserts, is that they never get it done. Apart from the generally accepted _beliefs_ about institutes and centers, what evidence do we have of actual functional accomplishments?

It is likely that further study of institutes and centers will show a variety of organizational models that operate under similar titles. One of the centers in the sample, for example, had an operating budget of $10 million, while another had an annual operating budget of $1,000, probably enough to cover the cost of several trips and office supplies for one professor. Obviously, these two organizations were quite different, not only in terms of the budget but also in terms of function, organizational structure and mode of operation.

The findings of this study do point out that institutes and centers are organized at every conceivable level and division within the university. What is not clear are the forces that press toward one alternative rather than another and the implications of one position within the structure as opposed to another. Neither is there any good information as to how institutes and centers are integrated and maintained within the organizational structure of the university. How are relationships with departments managed? How is the academic freedom and professional initiative of faculty maintained? Who controls which rewards and sanctions? Perhaps most important, how do

institutes and centers relate to the total university so as to enable it to operate as an institution rather than as an enormous holding company for a series of essentially separate institutions?

In view of the fairly large numbers of institutes and centers already in existence, and in anticipation of a probable continuing increase in this number, it is important that colleges and universities obtain a more sophisticated understanding of these new organizational forms. The irresponsible, opportunistic and uncoordinated growth of the 1960's must certainly give way to a more carefully reasoned, rationally planned and functionally based development during the 1970's.

Perhaps more significant, however, is the need to glean from the study of institutes and centers insights that would suggest new modes of organization and operation for the complex university. Since the emergence of the academic department as the primary organizational unit of the university, the organizing principle has been the discipline and profession rather than the task or function. The emergence of institutes and centers, first as a vehicle for the conduct of research but more recently for instruction and service as well, introduces the first significant organizational alternative to the discipline-based department. Do institutes and centers hold significant clues for improved functioning of the complex university or do they represent merely another example of the confusion and disorganization that often plague a contemporary university?

Stanley O. Ikenberry received his Ph.D. in 1960 from Michigan State University. He served on the staff of that university from 1958 to 1962, first in the Office of Evaluation Services and subsequently in the Office of Institutional Research. In 1962, he moved to West Virginia University as Assistant to the Provost for Institutional Research and Assistant Professor of Education. Dr. Ikenberry was appointed dean of West Virginia's newly formed College of Human Resources and Education in 1965. He joined Penn State's Center for the Study of Higher Education as its Associate Director in September 1969. Dr. Ikenberry's primary research interest is in the general area of governance, including organizational structure and functioning in the complex university.

The Center for the Study of Higher Education at The Pennsylvania State University was authorized by the Board of Trustees in January 1969. Dr. G. Lester Anderson, its director, was appointed the following April. The present staff of the center numbers 23 individuals including four full-time researchers, three visiting researchers and a cadre of advanced graduate students and supporting staff.

The mission of the center is to study higher education as an area of scholarly inquiry and research. Its studies are designed not only to be relevant to the university and the Commonwealth of Pennsylvania, but also to colleges and universities throughout the nation. The immediate focus of the center's research falls into three broad areas--governance, graduate and professional education, and human service occupation programs in two-year colleges.

Research reports, monographs and position papers prepared by staff members of the center are distributed within the university and to other institutions of higher education on a limited basis. Inquiries should be addressed to the Center for the Study of Higher Education, 110 Willard Building, The Pennsylvania State University, University Park, Pennsylvania 16802.